STATE OF CALIFORNIA—THE RESOURCES AGENCY

PETE WILSON, *Governor*

DEPARTMENT OF CONSERVATION
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Project Code: 22800002

Mr. T. L. Ditmore
Bechtel Petroleum Operations, Inc.
P. O. Box 127
Tupman, CA 93276

Dear Mr. Ditmore:

This office has received and reviewed the data submitted February 18, 1993 concerning Tulare zone injection operations in the 24Z and 7G/18G areas of Elk Hills field. We appreciate the considerable effort made by your engineering staff, particularly Mr. Hal Owens.

From the data submitted, the following observations were made:

1) In all instances in section 24Z, the first occurrence of subsurface breakthrough took place following a drop in injection pressure which exceeded the maximum allowable surface injection pressure (MASP) allowed by this Division. The length of time and degree of pressure exceedance varied from one month to 6 1/2 years and from 20 psi to 105 psi with four of the five wells exceeding the MASP by an average of 50 psi for the sustained 1 - 2 years prior to the pressure reduction. In four out of five wells, this breakthrough occurred 7 - 8 months after the pressure decrease while the fifth occurred only two months following the reduction. Three of the five wells continued to inject above the MASP following the pressure decline. All five wells showed marked injection rate reductions in the one to six months prior to the first occurrence of surface breakthrough. All five wells continued to exhibit surface breakthroughs through their shut-in dates.

2) As with section 24Z, all instances of surface breakthrough in section 7G occurred following exceedance of the MASP and a subsequent reduction of pressure. Four of the six wells exhibited associated significant fluid volume increases; however two showed no increase or an actual decrease in injection rate prior to the event. Unlike section 24Z, the first incident for each well occurred seemingly randomly thereafter, ranging from one